GOLDEN FORENSICS
TECHNICAL REPORT

September 15, 2023

PREPARED FOR:

David Bona
Carlson, Calladine & Peterson LLP
One Post Street, Suite 500
San Francisco, CA 94104
DBona@CCPLaw.com

PROJECT NAME:

Ruth v. Beartooth Electric Cooperative Inc, et. al.
Case No.: 22-cv-00230-KHR

LOSS LOCATION:

Clark Wildfire

DATE OF LOSS:

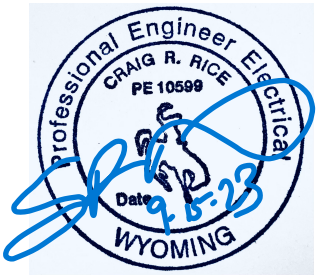
November 15, 2021

GOLDEN FILE:

210867

By:

Craig Rice, P.E.



Assignment

Golden Forensics (Golden) was requested to investigate the cause of Clark Wildfire that occurred on November 15, 2021. Craig Rice, P.E. was requested to review provided documents, conduct a site examination and laboratory examination of the collected power line conductors to determine if the power line was the cause of the wildfire.

Documents reviewed for this matter included:

1. National Fire Protection (NFPA) 921: Guide for Fire and Explosion Investigations 2021 Edition;
2. Bailey Bona Letter 4-5-23.pdf
3. Copy of Blink Count Hutton Line Creek 11-13-2021 to 11-17-2021.xlsx
4. Ex 1 - Stip 3 - Clark Fire Transfer of Evidence COC 080322.pdf
5. Ex 2 to Stipulation 3 - Sign-In Log.pdf
6. Ex 3 to Stipulation 3 - Log of Samples.pdf
7. Ex 39 Transcription of Audio 01_17_2022.pdf
8. Stipulation for Testing 3.pdf
9. 5 Yr Vegetation Scope Asplundh 00031-00034.pdf
10. Statements from Eric and Linemen 00054-00058.pdf
11. USDA RUS RoW Clearing 00059-00060.pdf
12. WY PSC Report 00067.pdf
13. 12-1-21 Video 1 IMG_5109.MOV
14. 12-1-21 Video 2 IMG_5112.MOV
15. Beartooth EAB Site Photos 12-1-21 00076-00240.pdf
16. Beartooth EAB Site Photos 6-16-22 00241-00273.pdf
17. Def. Beartooth Electric Cooperative's 2nd Supp. Rule 26 Disclosures D.1-6-23.pdf
18. 11-16-21 Location of the start of the fire, 200 ft east of cottonwood.MOV
19. 11-16-21 Video of cottonwood with burned tree limpIMG_5290.MOV
20. Beartooth Rule 26 Attachments 1-3-23 0001-00075.pdf
21. Def's Supplemental Rule 26 Disclosures D.1-4-23.pdf
22. 11-17 Calm Close up tree conductor.jpg
23. 11-17 Calm distant tree conductor 2.jpg
24. 11-17 Calm distant view of tree conductor.jpg
25. 11-17 Calm distatnt view.jpg
26. 11-17 Calm Tree Conductor 3.jpg
27. 11-17 Calm Wind Tree Conductor 1.jpg

28. 11-17 Clear closeup.jpg
29. Ash bucket looking East.jpg
30. Clark FaceBook.JPG
31. 11-16-21 Location of the start of the fire, 200 ft east of cottonwood.MOV
32. 11-16-21 Video of cottonwood with burned tree limpIMG_5290.MOV
33. 11-17 Calm Close up tree conductor.jpg
34. 11-17 Calm distant tree conductor 2.jpg
35. 11-17 Calm distant view of tree conductor.jpg
36. 11-17 Calm distatnt view.jpg
37. 11-17 Calm Tree Conductor 3.jpg
38. 11-17 Calm Wind Tree Conductor 1.jpg
39. 11-17 Clear closeup.jpg
40. 15029_2022-01-28_RAL.pdf
41. 19798.Bailey - Preliminary Findings Summary.pdf
42. 2020 Asplundh Liability Coverage.pdf
43. 6-30-21 Signed Asplundh Fire.pdf
44. Final Close Response 2022-002299.pdf
45. Hutton Application for Service Easement Sec 6.pdf
46. Hutton Property.pdf
47. 0001-0007 DE BEC PHOTOS 11-17.pdf
48. 0001-0009 6-30-21 Signed Asplundh Fire.pdf
49. 0010-0011 Hutton Application for Service Easement Sec 6.pdf
50. 0012-0024 19798.Bailey - Preliminary Findings Summary.pdf
51. 0025 15029_2022-01-28_RAL.pdf
52. 0026 2020 Asplundh Liability Coverage.pdf
53. 0027-0029 Final Close Response 2022-002299.pdf
54. 0030 Hutton Property.pdf
55. 0031 11-16-21 Video of cottonwood with burned tree limpIMG_5290.MOV
56. 0032 11-16-21 Location of the start of the fire, 200 ft east of cottonwood.MOV
57. 11-17 Calm Close up tree conductor.jpg
58. 11-17 Calm distant tree conductor 2.jpg
59. 11-17 Calm distant view of tree conductor.jpg
60. 11-17 Calm distatnt view.jpg
61. 11-17 Calm Tree Conductor 3.jpg
62. 11-17 Calm Wind Tree Conductor 1.jpg

63. 11-17 Clear closeup.jpg
64. 0001-0002 ASWY Leatherman CV.pdf
65. 0004 ASWY Leatherman Report.pdf
66. ~$po Ex Index 4-14-23.docx
67. 0063 P Nelson Photos.pdf
68. 0064 P Nelson Photos.pdf
69. Depo Ex Index 5-26-23.docx
70. Ex 1 annotated.pdf
71. Ex 10 Beartooth EAB Site Photos 12-1-21 00076-00240.pdf
72. Ex 100 - Photo of origin site annotated.pdf
73. Ex 101 - Photo of electric line.pdf
74. Ex 102 - Photo of fence.pdf
75. Ex 103 - Photo of origin site annotated.pdf
76. Ex 104 - Photo of origin site annotated.pdf
77. Ex 105 - Photo of origin site annotated.pdf
78. Ex 106 - Photo of origin site annotated.pdf
79. Ex 107 - Photo of origin site annotated.pdf
80. Ex 108 - Photo of origin site annotated.pdf
81. Ex 109 - Photo of origin site.pdf
82. Ex 11 12-1-21 Video 1 IMG_5109.MOV
83. Ex 110 - Map further annotated by CR.pdf
84. Ex 111 - Ruth family Verizon Statement.pdf
85. Ex 112 - Park County Sheriff narrative.pdf
86. Ex 113 - PL Answers to BEC IROGs.pdf
87. Ex 12 12-1-21 Video 2 IMG_5112.MOV
88. Ex 13 Beartooth EAB Site Photos 6-16-22 00241-00273.pdf
89. Ex 14 P Nelson Photos 0001-61.pdf
90. Ex 14-14-a P Nelson Photo 0014 annotated.pdf
91. Ex 14-15-a P Nelson Photo 0015 annotated.pdf
92. Ex 14-16-a P Nelson Photo 0016 annotated.pdf
93. Ex 14-17-a P Nelson Photo 0017 annotated.pdf
94. Ex 14-18-a1 P Nelson Photo 0018 annotated.pdf
95. Ex 14-18-a2 P Nelson Photo 0018 annotated.pdf
96. Ex 14-19-a P Nelson Photo 0019 annotated.pdf
97. Ex 14-25-a P Nelson Photo 0024 annotated.pdf

98. Ex 14-2-a P Nelson Photo 0002 annotated.pdf
99. Ex 14-31-a P Nelson Photo 0031 annotated by A Martin.pdf
100. Ex 14-45-a P Nelson Photo 0045 annotated by A Martin.pdf
101. Ex 14-58-a P Nelson Photo 0048 annotated by P Nelson.pdf
102. Ex 14-7-a P Nelson Photo 0007 annotated.pdf
103. Ex 15 0062 P Nelson Photos.MP4
104. Ex 16 Asplundh 0733-740 Hutton property.pdf
105. Ex 17 0001-0027 Jensen Hughes Photos.pdf
106. Ex 18 Stip Ex 8 – Evidence Log w Evidence Chain Custody Log.pdf
107. Ex 19 11-16-21 0937 Early Communication with Staff and Board 00063-00064.pdf
108. Ex 2 - CF Footprint map annoated by P Nelson.pdf
109. Ex 20 1-16-21 1058 Communication with staff and Board 00065-00066.pdf
110. Ex 21 2017 Asplundh Contract used in prior years 00001-00010.pdf
111. Ex 22 Asplundh Contract 2020 00011-00021.pdf
112. Ex 23 Davey Contract 2021 00035-00045.pdf
113. Ex 24 2022 Davey Tree Contract 00046-00053.pdf
114. Ex 25 Statements from Eric and Linemen 00054-00058.pdf
115. Ex 26 Website Tree Maintenance and Safety 00062.pdf
116. Ex 27 WY PSC Report 00067.pdf
117. Ex 28 BEC-Budget-2021-Approved.9b-Narrative-Only 00069-00080.pdf
118. Ex 29 6-22 Beartooth Bulletin 00061.pdf
119. Ex 3 000045-53 6-30-21 Signed Asplundh Contract.pdf
120. Ex 30 Website Tree Maintenance and Safety 00062.pdf
121. Ex 31 Cothern Photos 0001-11.pdf
122. Ex 32 T Gregory Photos 0001-0004.pdf
123. Ex 33 000066-000101 Verizon October_21_through_November_21.pdf
124. Ex 34 0001-0006 PCSO Narrative.pdf
125. Ex 35 - P Nelson video 4-5-22 IMG_4489.MOV
126. Ex 36 NWS Forecasted weather.pdf
127. Ex 37 Public Info Statement NWS.pdf
128. Ex 38 000066 Audio_01_17_2022_14_20_58.mp3
129. Ex 39 Transcription of Audio 01_17_2022.pdf
130. Ex 4 USDA RUS RoW Clearing 00059-00060.pdf
131. Ex 40 000257 King Facebook post.pdf

132. Ex 41 N Hoffert Photos 0001-0014_ new.pdf
133. Ex 41.13(a) annotated.pdf
134. Ex 42 - Doc 1 - Complaint.pdf
135. Ex 43 - Doc 7 - Answer of BEC.pdf
136. Ex 44 - Doc 11 - Answer of Asplundh.pdf
137. Ex 45 Def. Beartooth Electric's Rule 26 Initial Disclosures and First Supp Initial Disclosures.pdf
138. Ex 45a 16-23 BEC Initial Disclosures excerpt - K Owens Photos.pdf
139. Ex 45b 0031 11-16-21 Video of cottonwood with burned tree limpIMG_5290.MOV
140. Ex 45c 0032 11-16-21 Location of the start of the fire, 200 ft east of cottonwood.MOV
141. Ex 45d 1-8 BEC Initial Disclosures excerpt - K Owens Photos.pdf
142. Ex 45-e-1 Burned limb on path video.MOV
143. Ex 45-e-2 cottonwood to log home video.MOV
144. Ex 45-e-3 Video from log cabin back to power line cottonwood.MOV
145. Ex 45-f Re_ 157 Louis Lamour fire.pdf
146. Ex 45-g Back Burn Area.pdf
147. Ex 45h Google Earth Powell Flower Ruth Residences.pdf
148. Ex 46 DE BEC's Answers to PL's 1st Set of Interrog 2-23-23.pdf
149. Ex 47 Def. BEC's Answers to Pl's 1st Set of RFP of Docs. D.2-22-23.pdf
150. Ex 48 Def. BEC's Responses to Pl's 1st Set of RFA D.2-10-23.pdf
151. Ex 49 Asplundh's Initial Disclosures.pdf
152. Ex 5 5 Yr Vegetation Scope Asplundh 00031-00034.pdf
153. Ex 50 Asplundh_s Answers to Plaintiff_s Interrogatories (First Set).PDF
154. Ex 51 Asplundh_s Answers to Pltfs RFPDs.PDF
155. Ex 52 Asplundh_s Answers to Pltf_s RFA (First Set).PDF
156. Ex 53 PL Rule 30b6 Notice BEC.pdf
157. Ex 54 Asplundh_Invoice and timesheets to BEC.pdf
158. Ex 55 Map annoated by P Nelson.pdf
159. Ex 56 Google map annotated by Connie King.pdf
160. Ex 57 Fire footprints.pdf
161. Ex 58 00_Clark_911_A_2021_11_15_22_25_19_by_Start_Time_asc.mp3
162. Ex 59 Google zoom of Ex. 56 annoated by M King.pdf
163. Ex 6 000001-14 Fire Chief Hoffert Report.pdf

164. Ex 6.10.a Clark Fire 000010 annotated.pdf
165. Ex 6.8(a) Clark fire 000008 annotated.pdf
166. Ex 60 fire with source.pdf
167. Ex 61 text message 11-16-21.pdf
168. Ex 62 annotated.pdf
169. Ex 63 annotated.pdf
170. Ex 64 Tree Co to Pay Record $95M Fine for Immigratoin Practices.pdf
171. Ex 65 annotated.pdf
172. Ex 66 Google image of BEC OCR.pdf
173. Ex 67 P Nelson Photos 0007 annotated.pdf
174. Ex 68 Google image of Huttons camp annotated by D Hoffert.pdf
175. Ex 69 PL Rule 30b6 Notice Asplundh 4-4-23.pdf
176. Ex 7 000015-35 EC 0001 Pg 0001 IRIS Fire Report.pdf
177. Ex 70 Asplundh production to date 4-7-23.pdf
178. Ex 71 Asplundh 001691 - highlighted and paginated.pdf
179. Ex 72 Excerpts of Asplundh LCQS.pdf
180. Ex 73 Asplundh 001545-001566.pdf
181. Ex 74 Asplundh 001567-001571.pdf
182. Ex 75 Asplundh 001572-001587.pdf
183. Ex 76 Asplundh 0015788-001591.pdf
184. Ex 77 Asplundh 001592-001677.pdf
185. Ex 78 Asplundh 001677-001690.pdf
186. Ex 79 - ANSI A300 Part 9 - 2017 Tree Risk Assessment.pdf
187. Ex 8 Part 1 0001-0140 IRIS photos.pdf
188. Ex 8 Part 2 0141-0262 IRIS photos.pdf
189. Ex 80 - ANSI A300 Part 1.pdf
190. Ex 81 - Asplundh 001694.pdf
191. Ex 82 - Asplundh 001807.pdf
192. Ex 83 - Asplundh 001915.pdf
193. Ex 84 - Asplundh 001919.pdf
194. Ex 85 000258-000274 UEP_Bulletin_1730-1.pdf
195. Ex 86 000315-001038 BEC BOD Minutes.pdf
196. Ex 88 RUS Form 300.pdf
197. Ex 89 - Beartooth Maps 000274-000277.pdf
198. Ex 89a Asplundh Mapping Access Line Creek Circuit Map.pdf

199. Ex 9 KnottBlack Investigation Report 12172021 Asplundh 000706-718.pdf
200. Ex 90 - E. Elton Photographs.pdf
201. Ex 91 - Safety Hierarchy of Controls.pdf
202. Ex 92 - P Toler drawing.pdf
203. Ex 93 - Clark Fire 000009 photo annotated.pdf
204. Ex 94 - Clark Fire 000012 photo annotated.pdf
205. Ex 95 - IMG_6665 - branch.pdf
206. Ex 95 - IMG_6665.jpg
207. Ex 96 - Clark Fire 000008 photo.pdf
208. Ex 97 - Hot spot map example 1.pdf
209. Ex 98 - Hot spot example 2.pdf
210. Ex 99 - Photo of tree annotated.pdf
211. IMG_1702.mp4
212. Butsch, Jeremy (Asplundh GF) (2023.6.9).pdf
213. Cothern, Teri (Ruth Neighbor) (2023.3.13).pdf
214. Dodge, Larry (Firefighter Eyewitness) (2023.3.16).pdf
215. Elton, Eric (BEC Line Superintendent) (2023.5.16).pdf
216. Hoefer, Noralee (Eyewitness) (2023.5.17).pdf
217. Hoffert, Dave (Firefighter Eyewitness) (2023.3.16).pdf
218. Hoffert, Nate (Clark Fire C&O Investigator) (2023.3.14).pdf
219. King, Connie (Fire Start Eyewitness) (2023.3.13).pdf
220. King, Mel (Fire Start Eyewitness) (2023.3.13).pdf
221. Martin, Alicia (Black Truck Eyewitness) (2023.3.16).pdf
222. Nelson, Pam (AOO Property Caretaker) (2023.3.13).pdf
223. Owens, Kevin (BEC General Manager) (2023.3.15).pdf
224. Paulsen, JP (Asplundh Corporate Rep) (2023.4.12).pdf
225. Rowe, Charles (Asplundh Crew Foreperson) (2023.5.17).pdf
226. Ruth, William (Plaintiff) (2023.5.18).pdf
227. Toler, Perry (Asplundh Pre-Inspector) (2023.5.17).pdf
228. 0001-0030 Final Deliverables 8-15-2023.pdf
229. 0031 55059 Clark Fire C101.pdf
230. 0032 55059 Clark Fire C102.pdf
231. 0033 55059 Clark Fire C103.pdf
232. 0034 55059 Clark Fire C104.pdf
233. 0035 Clark Fire - LiDAR email deliverable July 2023.pdf

234. 0036 57003 - Clark Fire Measurements 6-16-23.pdf
235. 0037 57003 - Clark Fire Coordinates 6-16-23.pdf
236. 0038-0039 GPRS_TP Report 8-11-23.pdf
237. 0001-0007 Curriculum Vitae of John W Goodfellow - February 2023.pdf
238. 0008 Expert Witness Consulting Rates JWGoodfellow BioCompliance Consulting Inc.pdf
239. 0009 4-yr testimony -JWGoodfellow.pdf
240. 0010-0019 Opinions of JWGoodfellow -Clark Wildland Fire.pdf
241. 0001-0002 Shuck_Samuel_CV_0823.pdf
242. 0001-00050 1A3917001 Clark Fire Expert Disclosure Report.pdf
243. 000001-14 Fire Chief Hoffert Report.pdf
244. 000015-35 EC 0001 Pg 0001 IRIS Fire Report.pdf
245. 000036-38 Sublette Examiner _ Clark residents question fire report - Power co presents results of investigation.pdf
246. 000039-41 Electric coop says it wasn't responsible for fatal Clark fire--Powell Tribune.pdf
247. 000042-44 Woman dies in Clark fire_ 300 acres burned and homes lost-codyenterprise.com.pdf
248. 000045-53 6-30-21 Signed Asplundh Contract.pdf
249. 000054-57 Crews spend harrowing night fighting Clark fire _ Wyoming News _ billingsgazette.com.pdf
250. 000058-59 Power Company Denies Fault.pdf
251. 000060-000064 Husband of woman killed in '21 Clark fire sues power company.pdf
252. 000066 Audio_01_17_2022_14_20_58.mp3
253. 000067 Public meeting with Beartooth electric and citizens of Clark_ .msg
254. 0001-0002 Grass Below 3rd Wall Tent Frame w photo.pdf
255. 0001-0020 P Nelson Photos.pdf
256. 0001-0037 B Pahlke Photos.pdf
257. 0003-0005 The Wire, The Tree, the Stick w Gretchen comments.pdf
258. 0006-0007 Tipi Pole Burn Site.pdf
259. 0008-0010 Trash Bin ash bucket.pdf
260. 0011-0014 A Day in the Life.pdf
261. 0015-0016 The Tree Stands_Redacted.pdf
262. 0021 P Nelson Photos.pdf

263. 0022-0061 P Nelson Photos.pdf
264. 0062 P Nelson Photos.MP4
265. 2021 Clark Fire NWS map.jpg
266. T Gregory Photos 0001-0004.pdf
267. 0001-0140 IRIS photos.pdf

Background

The background for the investigation of the Clark Wildfire was that on November 15, 2021, a storm front entered the area with high winds. In the evening a fire was discovered.

Investigator Nate Hoffert of Park County Fire District #4 produced a report on November 16, 2021, with the opinion that the power line had contacted the tree and caused the fire.

Site Examination

Site examinations were conducted on April 20, 2022, and June 16, 2022. The vegetation had not yet started to grow during the April site examination and the burned area had not changed. The vegetation had leafed out before the June examination.

The April examination revealed the subject tree as it would have been in November of 2021 without new growth as shown in Figure 1. The branch identified as E-11 in the LiDAR report and Item #11.01 in the Jensen Hughes report is circled in red. The power line was still energized during the April 2022 examination and could not be approached. The power line was de-energized for the June 2022 examination and a manlift was utilized to access the power line and tree branches.

The distance from the power line to the E-11 branch was measured to be 78" as shown in Figure 2. The LiDAR measured distance was 60". The differences in the measurements could be attributed to the temperature as it was warmer in June than April and the conductor would have sagged more in the warmer temperature. The conductor was then pushed from the manlift toward the tree and the conductor moved approximately 4 feet closer to E-11. It was not possible to push the conductor to be within a foot of E-11.

Figure 1: Subject Tree April 2022

Figure 2: Measurement of E-11 to Conductor during June Examination

There were tree branches just south of E-11 that were closer to the conductor. These were measured to be approximately 55″ from the conductor. These branches were nearly 2 feet closer to the conductor than E-11.

LiDAR measured the closest branches were to the north of E-11 and were approximately 43″ from the conductor as shown in Figure 3. No burning was observed on these branches. E-11 is again indicated with the red circle.

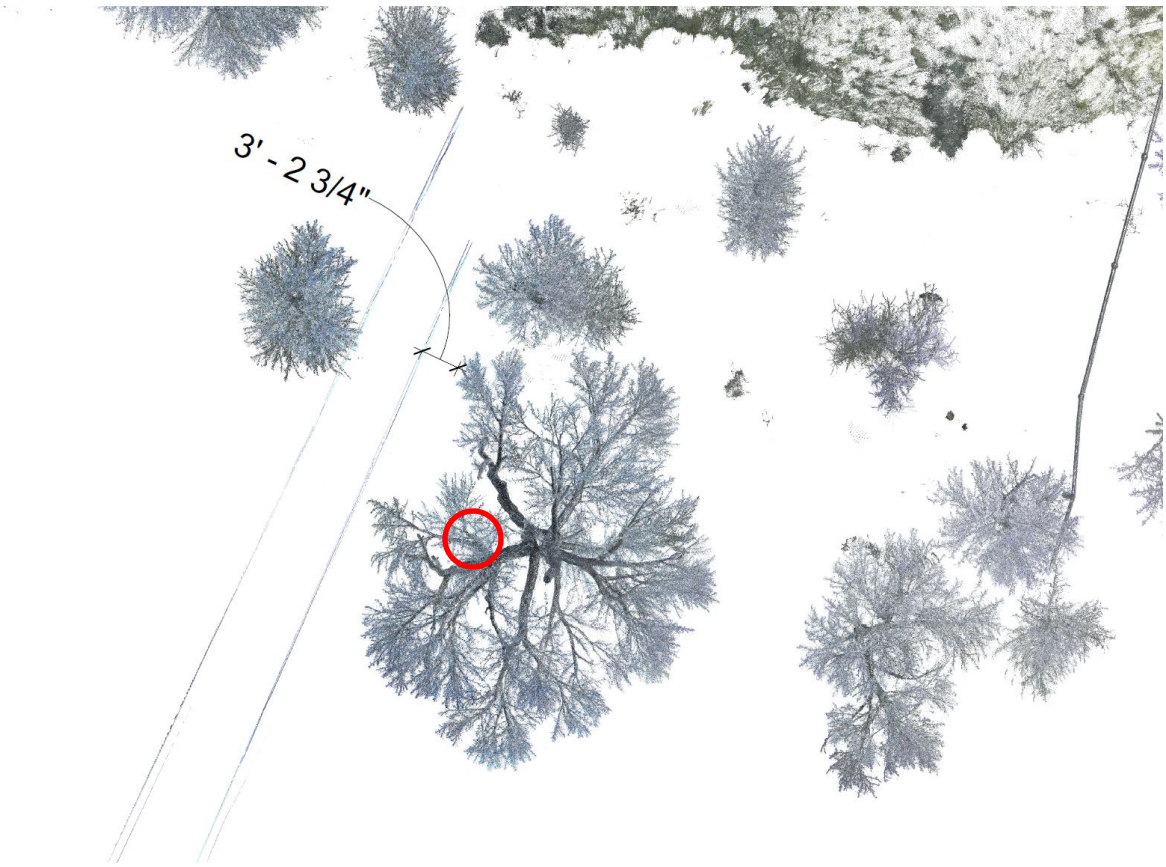


Figure 3: GPRS 0034, LiDAR Closest Tree Branches to Conductor

The LiDAR measured the sag of the conductor to be 80 inches as shown in Figure 4. Notice the sag is the greatest in the middle of the span, but the subject tree is closer to the south pole, Figure 5. The distance the conductor can sway toward the tree at E-11 will be less than 80 inches, and therefore, the conductor would not be able to contact E-11.

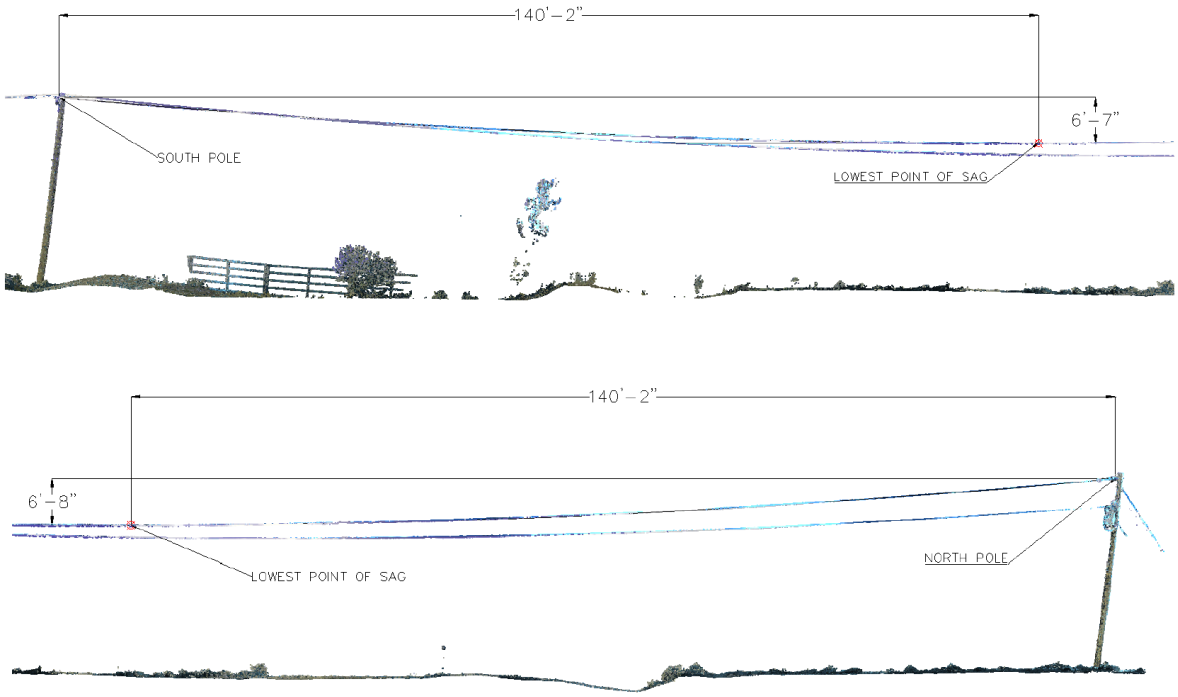


Figure 4: LiDAR Measured Sag of Conductor

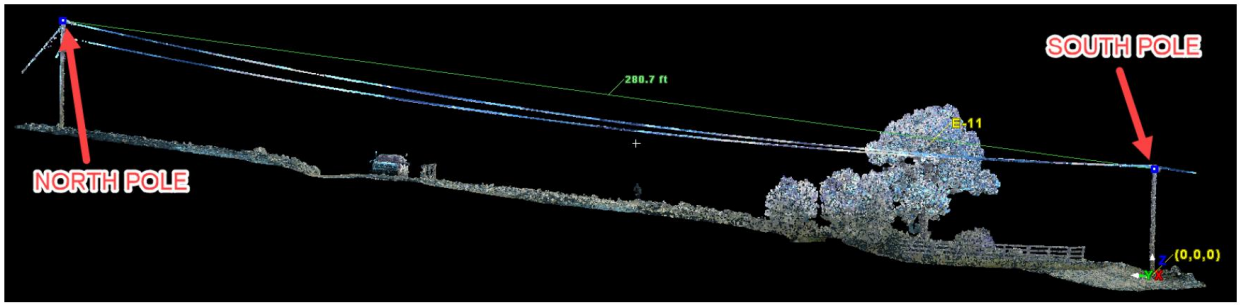


Figure 5: LiDAR Image of Conductor Span

A tree branch with burning was reportedly found east of the subject tree. The location was indicated by Pam Nelson. This location has been referred to as E-1 as indicated in Figure 6 from the LiDAR report. Figure 7 is a view from E-1 looking west toward the subject tree and E-11. The general location of E-11 is indicated by the red circle. The exact location can not be seen in the image because it is on the side of the tree away from view. Notice the measurement straight line through tree branches of two trees is 55.7 feet.

Ruth v Beartooth Electric Cooperative
Golden File: 210867

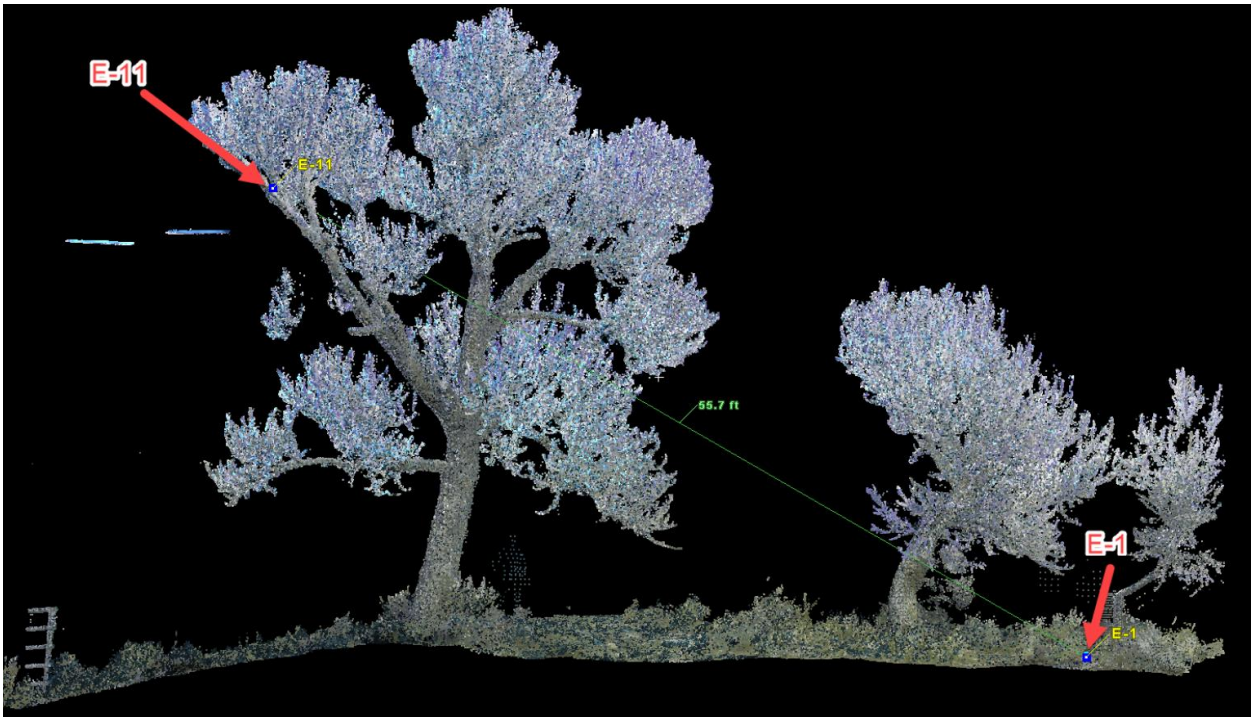


Figure 6: LiDAR Image of E-11 and E-1

Figure 7: View from E-1 Looking West Toward E-11

The west most location of burning of vegetation was identified in the LiDAR scan as Spot Fire 1, Figure 8. The distance between E-11 and Spot Fire 1 was 143 feet. Notice there are multiple trees, shrubs and dry grass between the two locations and no fire was observed in that area. Figure 9 is an image from Spot Fire 1 looking west toward the subject tree. The subject tree is obscured by multiple trees.

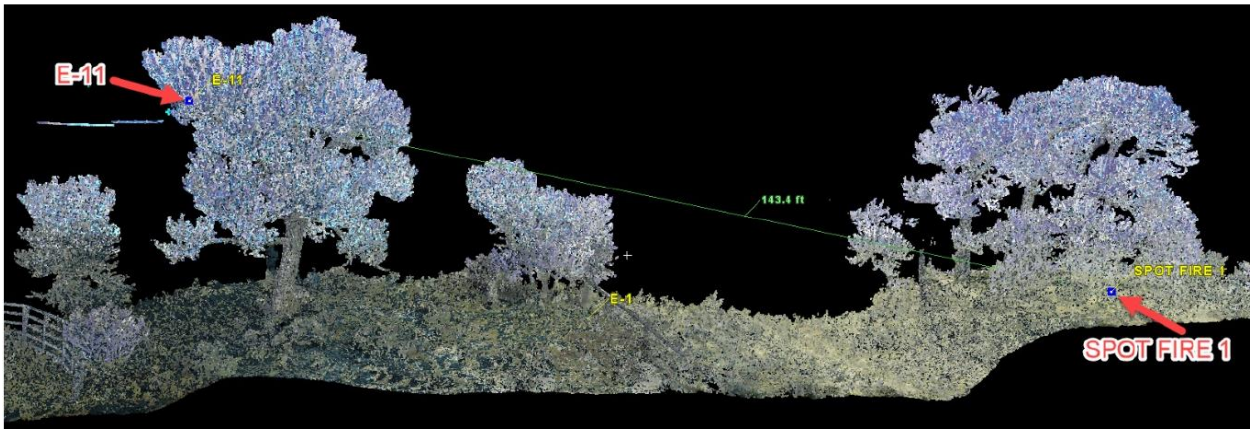


Figure 8: LiDAR Report GPRS 0019

Figure 9: Image Looking West from Spot Fire 1 toward E-11

Examination of the site revealed multiple fire rings. One such ring was just north of the fire area as shown in Figure 10. This image is looking south. The subject tree is indicated with the red circle. The western most Spot Fire 1 is indicated by the red arrow. The branch E-1 is indicated by the yellow arrow. It is possible the branch was from a previous campfire and it was transported to the location where it was found at some point in time and not related to the Clark Wildfire.

Figure 10: Image Looking South from the Driveway

Laboratory Examination

Laboratory examinations were conducted on April 11, 12, and July 27, 2023. During the examinations the tree branches that had been collected were examined as well as the power line conductor.

The conductor was examined visually with a Keyence digital microscope (KDM) and Scanning Electron Microscope (SEM). The conductor is made of Aluminum strands on the outside with a steel core strand for strength (ACSR). The aluminum strands were examined and no evidence of arcing was observed. There were deformations due to mechanical impact with a rock or other hard object as shown in Figure 11. Notice striation lines in the deformation due to something sliding and gauging the aluminum strand. There was no evidence of thermal melting. Thermal melting causes the aluminum to soften and become liquid which would leave a rounded and flowed surface.

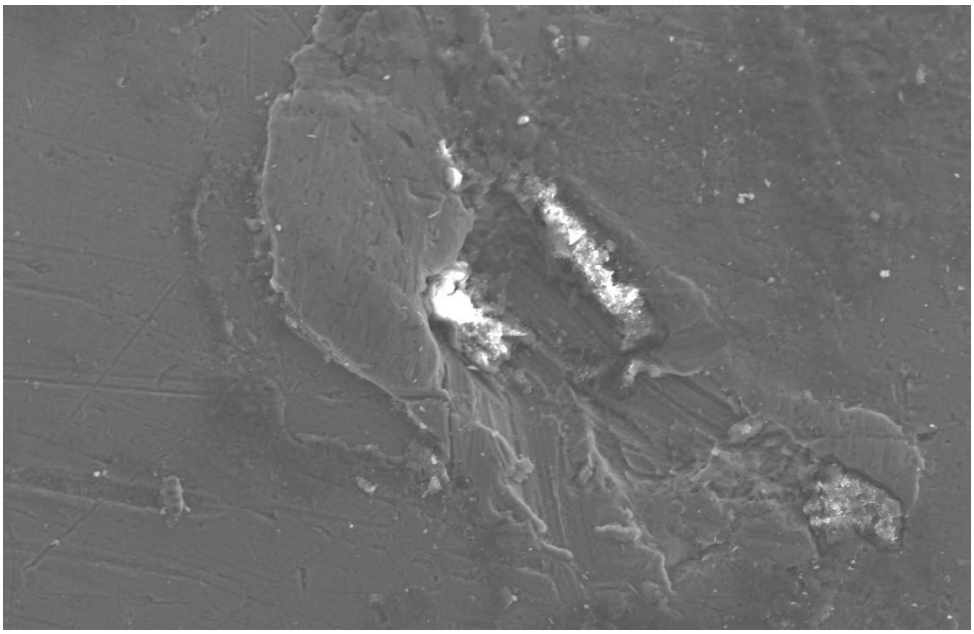


Figure 11: SEM Image of Deformation

The conductor in the area of the tree had a dark residue on the surface. During the laboratory examinations it was proposed to collect a sample to determine what the residue was. This was not completed. Some of the experts offered that it could be an organic material or it could be soot.

Response to Plaintiff Reports

The Jensen Hughes report dated August 14, 2023, was provided as the Plaintiff Electrical investigative report. The executive summary stated the fire was caused by power line to tree contact. It stated "Asplundh chose not to trim the subject tree based on a visual inspection performed from outside the property at a distance of approximately 300 feet." The Asplundh inspector, Perry Toler, testified that he was approximately 35 feet[1] from the tree. Figure 12 was taken from the approximate location where Mr. Toler testified that he viewed the tree clearance.

Figure 12: Image taken from the Driveway Looking South Along Power Line

The executive summary continues to opine "contact between the subject tree and distribution line occurred during a windstorm and caused the ignition of woody

[1] Toler, Perry Deposition page 11.

material in the crown of the tree." As stated in the site examination, the power line was pushed and it could not be pushed to within two feet of E-11.

Page 10 of the Jensen Hughes report stated "LiDAR scanning was performed at the Hutton property on April 20, 2022, and portions of the subject tree's crown were measured to be 3.5 feet away from the distribution line's phase conductor." The report fails to mention that these tree branches were 2 feet closer to the phase conductor than E-11 and did not contain any burning or contact marks on them. These branches were further north on the tree and closer to the middle of the span. The conductor has more sag at that location and therefore, the phase conductor would have contacted these branches before it contacted E-11. The location of the branches is shown in Figure 2, copied below.

Figure2: Measurement of E-11 to Conductor during June Examination

In the same paragraph on page 10 the report stated, "Twigs found near the outbuilding had areas of discoloration that were consistent with utility line contact." Two photographs taken by IRIS were referenced showing burned twigs on the east side of the outbuilding. This was well within the fire area. Figure 1 from the Jensen Hughes report is below showing the aerial view. The blue arrow indicates the Spot Fire 1 location. Notice the Outbuilding is east of this fire location. There were multiple burned trees around the outbuilding that it is more likely where the twigs were from, than the subject tree. Figure 13 is a view from the Outbuilding looking west showing multiple burned trees and lots of burned twigs on the ground. The subject tree is obscured by multiple trees.

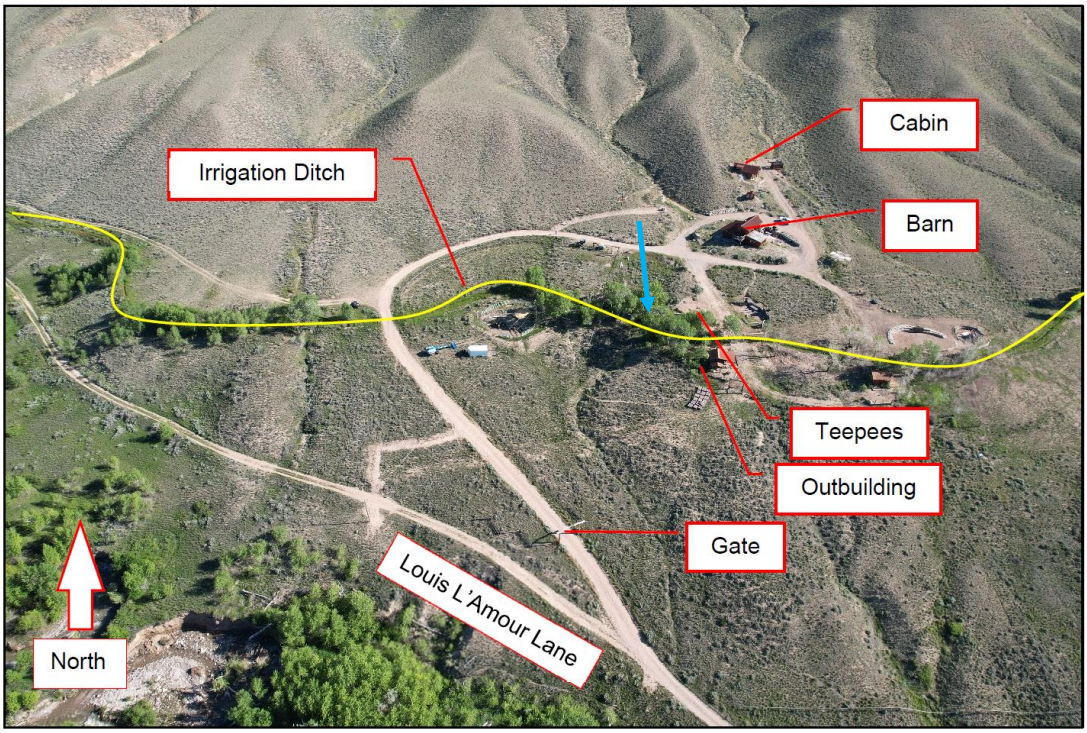


Figure 1 - Aerial view of the camp with callouts.

Figure 13: View from the Outbuilding Looking West

The Jensen Hughes report stated on page 13, paragraph 4, "A broken and burned portion of a branch was found on the side of the subject tree facing the distribution line," identified as A. This is also referred to as E-11. The report stated the distance between the conductor and the burned branch was 78 inches. Paragraph 3 stated the conductor could be pushed approximately 48 inches. This would indicate the sag in the conductor was not enough to allow the conductor to contact the branch and the conductor was still 30 inches away. This is not a re-creation that would be similar to the wind acting on the conductor. The wind will act on the entire conductor, not just the point closest to the tree. The conductor in the middle of the span between the poles will have the greatest lateral distance. Due to the tree being closer to the pole than the middle the lateral sway will be a little over half of the maximum sag distance. The maximum sag was measured to be 80 inches. Therefore, the maximum lateral sway near the tree will be less than 48 inches, the conductor will be more than 18 inches away from E-11.

Paragraph 5 discussed limb E-9 which was south of E-11 and closer to the south pole. Being closer to the south pole, there would be less lateral sway potential for the

conductor. The conductor to the closest portion of E-9 was measured to be 55 inches. This branch was collected and examined further by other parties.

Page 18, paragraphs 1 and 2 discuss discoloration and resinous material on the conductor section near the tree. The section with discoloration was approximately 2.5 feet. The resinous material was consistent with cottonwood tree pitch. There was not evidence of arcing on the conductor anywhere in the discolored section. The Jensen Hughes report also did not indicate any locations of arcing on the conductor. Because the conductor did not have enough sag to contact the tree branches but the presence of tree resin on the conductor would be more consistent with a wind from the east pushing the tree branches toward the conductor. Cottonwood will produce more resin during the growing season and if the branches were leafed out the wind would cause more force. It is more probable the pitch and discoloration were deposition on the conductor during a wind from the east when the tree was leafed out and not from a west wind.

Page 32 of the report discusses the locations of discoloration and tree branch artifacts as shown in Figure 14 from the report below. The analysis and Figure 14 fail to address that the LiDAR scan identified the tree branches circled in blue were much closer to the conductor the E-11 or E-9 and was closer to the midpoint of the span where the lateral sway is the greatest. The blue line is an exaggeration of the conductor sway to show lateral sway would have contacted the branches to the north before either the E-11 or E-9 locations. Those branches were not collected for further examination. Golden's examination of those branches at the site revealed no burning or evidence of line contact.

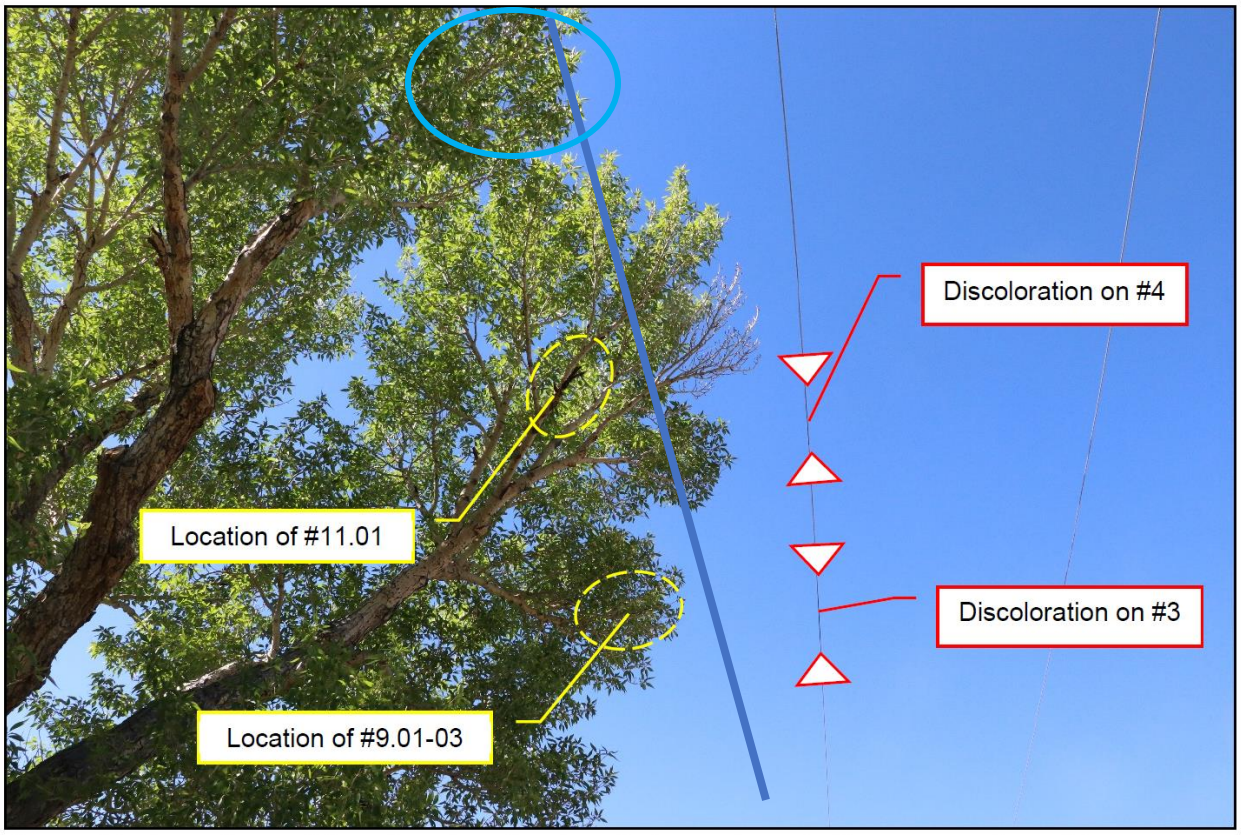


Figure 14 - Locations of line discoloration in relation to burn indicators on the subject tree.

Conclusions

Based on the investigation to date, and to a reasonable degree of engineering certainty, my findings are as follows:

1. There is no evidence of arcing on the phase conductor.
2. The sag of the conductor was not enough to contact the E-11 or E-9 branch with a west wind.
3. The conductor could not be physically pushed to contact the tree near the tree, which is more point force than the wind would exert on the conductor.
4. The tree residue on the conductor was more probable the result of an east wind when the tree was leafed out.

Limitations

These services were performed in the manner defined in the Assignment section of this report. The opinions contained within this summary were based on the information collected and reviewed to date, and are based on the expert's education, experience, and

training. All findings are based upon a reasonable degree of engineering certainty. The data, findings, and opinions are subject to changes that may be warranted by subsequently acquired information. Any re-use of this report or the conclusions presented without the express permission of Golden Forensics is prohibited.

Qualifications

Mr. Rice has over 20 years as a Forensic Engineer and has been involved in over 1,000 investigations both in electrical and mechanical systems. Mr. Rice is a registered Professional Engineer in 12 states. He is a Certified Fire Investigator, through the International Association of Arson Investigators, and a Certified Fire and Explosion Investigator, as well as a Certified Vehicle Fire Investigator through the National Association of Fire Investigators. Mr. Rice has worked in the mining, heavy equipment, and industrial equipment industries.

Sampling of Subjects Investigated

Electrical/mechanical appliances; HVAC; heat cables; propane and natural gas systems; industrial, commercial, marine, vehicle, and residential electrical and mechanical systems; hazardous-location equipment; electric motors, generators, and transformers; electrical switches/relays; PLC and relay control systems; neon signs; lighting equipment, lightning damage to equipment; plumbing systems; personal injury; and electrical-equipment arcing failures.

Employment History

2019-Present	Golden Forensics, LLC, Arvada, Colorado, Principal Engineer
2017-2019	Konecranes, Denver, Colorado, Field Service Technician
2007-2017	CASE Forensics, Englewood, Colorado, Principal, Electrical Engineer
2004-2007	Phoenix Laboratory and Engineering Services, Forensic Engineer
2001-2004	Euclid-Hitachi Heavy Equipment, Cleveland, Ohio, Customer Support Manager
2000-2001	SEA Limited, Lawrenceville, Georgia, Forensic Engineer
1998-2000	Siemens/Westinghouse, Alpharetta, Georgia, Field/Commissioning Engineer

Education

Bachelor of Science Electrical Engineering, Rose-Hulman Institute of Technology, 1998

Professional Affiliations

International Association of Arson Investigators (International and State)

National Association of Fire Investigators

National Fire Protection Association

Certifications/Registrations

Certified Fire Investigator, (IAAI-CFI), Certificate #:41-031906

Certified Fire and Explosion Investigator and Vehicle, (CFEI) Registration #:7699-4500V

National Engineering Registration (NCEES)

Professional Engineer, Alaska, E-14715

Professional Engineer, Arizona, 54172

Professional Engineer, California, 21534

Professional Engineer, Colorado, 38951

Professional Engineer, Louisiana, 0040104

Professional Engineer, Montana, 17161

Professional Engineer, Nebraska, E-11544

Professional Engineer, Nevada, 022160

Professional Engineer, New Mexico, 17214

Professional Engineer, Oklahoma, 28127

Professional Engineer, Utah, 5957342-2202

Professional Engineer, Wyoming, 10599

Private Investigator, Montana, 8163

Private Investigator, Nevada, 1627

Speaking Engagements

Wildfires and Electrical Distribution. Golden Forensics, Centennial, CO. 2022, November.

Ethical Dilemmas in Evaluating Electrical & Mechanical Equipment. Golden Forensics, Golden, CO. 2021, April.

Wildland Ignition Causes. CASE Forensics, Denver, CO. 2016, May.

Water Damage to Electrical & Mechanical Equipment. CASE Forensics Denver, CO. 2016, May.

Electrical and Heating Appliance Fires. Alaska IAAI Annual Training Conference, Fairbanks AK. 2015, April.

Electrical Fires and Myths. CASE Studies Denver, CO. 2014, January.

Hot Wires. Nevada IAAI, Las Vegas, NV. 2012, July.

Increasing Efficiency in Investigations. MWFB Insurance, Laramie, WY. 2012, March.

Ethics and the Engineer. Wyoming Claims, Cheyenne, WY. 2011, May.

Exhaust Fan Fires. Co-Presenter, IAAI ATC Conference, Las Vegas, NV. 2011.

Was It Lightning? RMASIU Conference, Englewood, CO. 2011, May.

Ethics and the Expert. Wyoming Claims Association Conference, Cheyenne, WY. 2011, May.

Crash and Burn: Burn Investigations. CASE Forensics, Denver, CO. 2010, September.

Crash and Burn: Light Bulb Analysis. CASE Forensics. 2009, November.

Crash Day: Light Bulb Analysis. Oregon Chapter of the International Association of Special Investigations Unit, Portland, OR. 2009, June.

Evidence Preservation, The Adjuster's Role. RMASIU, Englewood, CO. 2008, January.

Electrical Fires 101. Phoenix Investigations, 1-Day Seminar, Arvada, CO. 2007, September.

Basic Fire Scene Electricity. Colorado Chapter of I.A.A.I., Littleton, CO. 2004, December.

Continuing Education

- Principles of Fire Investigation Multi-Program, 67 hour Tested
- Fundamentals of Interviewing, 2022
- Physical Evidence, 2022
- Principles of Fire Investigation, 2022
- Report Writing, 2022

- Residential Natural Gas Systems, 2022
- Fire Investigation Scene Safety, 2022
- Understanding Undetermined, 2022
- Critical Evaluation and Testing of Commonly Reported Accidental Causes, 2021
- Alternative Fuel Vehicles, 2021
- Documenting the Event, 2021
- Effective Investigation and Testimony, 2021
- Fire Chemistry, 2021
- Legal Aspects of Investigating Youth-Set Fires, 2021
- Accreditation, Certification, and Certificates, 2021
- Charleston Sofa Super Store Fire, 2021
- The Deposition Part 1: Format, Content, and Preparation, 2021
- Forensic Analysis of Fire Caused by Improper Fireplace Installation, 2021
- New Mexico Ethics Session, 2020
- Crane and Hoist Regulations, 2019
- Fire Safety, 2019
- Ladder Safety, 2019
- Hazard Communication Safety Course, 2018
- MSHA refresher, 2019
- Elevated Aerial Platform Safety Training, 2018
- Digital Point of Work Risk Assessment, 2018
- PACE Distracted Driving, 2018
- Bloodborne Pathogens Safety Training, 2018
- PPE Safety Training, 2018
- Hearing Conservation Safety Training, 2018
- Lock Out Tag Out Try Out LOTOTO Safety Training, 2018
- Rigging Basics Course, 2018
- Crane Operator Course, 2018
- VFD Technologies, 2018
- PACE Rear End Collision Safety Training, 2018
- Confined Space Awareness, 2018
- Heat Stress, 2018
- PACE Backing Safety, 2018
- Mobile Elevating Work Platform, 2018
- Electrical Safety, 2018
- Hazard Identification training, 2018
- Hoist Maintenance, 2018
- Fall Protection Safety, 2018
- Hand Safety, 2018
- Incident Reporting, 2018
- Ergonomics, 2018
- Basic Crane Repair, 2018
- Automated Defibrillator – AED, 2017
- Aerial Work Platform Practical, 2017
- Arc Flash Safety Training, 2017
- Electrical Safety, 2017

- Fire Prevention, 2017
- Fatigue Awareness, 2017
- OSHA 10, 2017
- Forklift Practical, 2017
- Forklift Safety Awareness, 2017
- Machine Guarding, 2017
- Safety with Hand & Powered Tools, 2017
- Slips & Trips Hazards, 2017
- Asbestos Awareness Training, 2016
- Basic Electricity, CFITrainer.Net, 2015
- Arc Mapping Basics, CFITrainer.net, 2015
- Expert Challenges and the Revised NFPA 1033, Cozen O'Connor, 2014
- 24HR HAZWOPER, 2014
- Hazard Communication, 2014
- Lead Standard for Construction, 2014
- Asbestos Awareness Training, 2014
- Ethics & Social Media, CFITrainer.net, 2014
- Applying Ethics and Happiness to Engineering, 2014
- Fundamentals of Arctic Engineering, University of Alaska, 2014
- Vacant and Abandoned Buildings: Hazards and Solutions, CFITrainer.net, 2012
- Electrical Safety, CFITrainer.net, 2012
- Understanding Fire Through the Candle Experiments, CFITrainer.net, 2012
- Fire Protection Systems, CFITrainer.net, 2012
- Explosion Dynamics, CFITrainer.net, 2012
- Fall Protection, Alpha Safety, 2012
- More Engineering Ethics Cases, Thomas Mason, PE, 2010
- Fire and Explosion Investigations: Utilizing NFPA 1033 and 921, CFItrainer.net, 2010
- The HAZWOPER Standard, CFItrainer.net, 2010
- Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, NAFI, 2009
- Introduction to Fire Dynamics and Modeling, CFITrainer.net, 2009
- Chimney Safety & Inspection, Rocky Mountain Thermocrete, February 12, 2009
- Digital Photography and the Fire Investigator, CFITrainer.net, 2008
- The Scientific Method for Fire and Explosion Investigation, CFITrainer.net, 2008
- MagneTek: A Case Study In The Daubert Challenge, CFITrainer.net, 2008
- Electrical Investigations Arc Mapping Update, IAAI Annual Training Conference, May 2008

- Critical Thinking Solves Cases, CFITrainer.net, 2007
- Introduction to Evidence, CFITrainer.net, 2007
- Ethics and the Fire Investigator, CFITrainer.net, 2007
- Investigating Motor Vehicle Fires, CFITrainer.net, 2007
- Insurance and the Fire Investigation, CFITrainer.net, 2007
- Electrical Fires 102, Vytenis Babrauskas, 2006
- Wild Land Fire Investigations by Phoenix Investigations, 2006
- Commercial Kitchen Exhaust System Fire Investigations by Phil Ackland & Assoc, 2006
- Denver Law Day Seminar by DCA, 2004, 2006
- National Electric Code, NFPA, 2005
- Investigations of Gas and Electric Appliance Fires, Fire Findings Laboratories, 2004
- Expert Witness Courtroom Testimony, I.A.A.I., 2004
- Mine Safety Training Certification (MSHA, Australia, South Africa, Colombia), 1998 to 2003
- Lightning 101 Seminar, Dranetz BMI, 2001
- Ohio Arson School Seminar, 2000
- Motor Maintenance, Siemens, 1999
- AC Master Drive and DC Drive by Siemens, 1998
- Programmable Controller Seminars, Germany, 1998

Compensation

Golden Forensics, LLC, is currently compensated for Mr. Rice's time at a rate of $320 per hour. The hourly rate is typically revised annually.

All fees and expense incurred for deposition time, travel expenses, reproduction of photographs, etc., will be paid in advance. Deposition fees will be charged a minimum of 4 hours plus travel time and expenses. Any additional fees will be invoiced after the deposition is concluded.

Testimony History (Within last 4 years)

Deposition – Rolling J Investments, LLC v. KK Design and Hata Construction, Case No. 19CV030286, District Court, Eagle County, Colorado, November 14, 2022

Deposition – Julie A. Woods v. Industrial Controls of Oklahoma and Georgia Pacific, LLC, Case No. CJ-2014-258, District Court for Muskogee County, State of Oklahoma, December 15, 2021

Trial – Heights Healthcare Company, LLC d/b/a The Peaks Care Center v. BCER Engineering, Inc., Case No. 2019CV031127, District Court, Boulder County, State of Colorado, May 26, 2021

Deposition – Wayne and Roxy Gillespie v The Timken Company, CNH Industrial America, LLC, Case No. CV 20-51-GF-BMM, US District Court for the District of Montana, November 18, 2020

Deposition – Columbine Country Club v Textron Specialized Vehicles, Case No. 1:18-cv-1730-REB-SKC, US District Court for the District of Colorado, September 17, 2019

Deposition - Givens v Oklahoma Gas and Electric, Davis H. Elliot, Case No. CJ-2017-2825; Oklahoma County District Court, State of Oklahoma; May 30, 2018

Deposition - Balfour Beatty/DPR/Big-D, A Joint Venture v Truland Systems Corporation et al Case No. 77-158 158 00603 13; American Arbitration Association; May 8, 2017

Deposition - Justine Platero v South Urban Properties, LLC, d/b/a Southglenn Place; Triton Investment Company; Xylem Inc.; Air Conditioning Associates, Inc. d/b/a ACA/Denver Boiler Company, Inc and Starman Services Incorporated, Case No. 2015CV31510; Arapahoe County District Court, State of CO; March 9, 2017